



west virginia department of environmental protection

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**Maintenance Plan Revision  
for the  
Charleston, West Virginia Area  
2006 24-Hour PM<sub>2.5</sub> NAAQS,  
Comprising Kanawha and Putnam Counties**

**Proposed  
April 2022**

West Virginia Division of Air Quality  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304

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Promoting a healthy environment

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## List of Acronyms

<b>Acronym</b>	<b>Definition</b>
AQS	Air Quality System
CAA	Clean Air Act
CAIR	Clean Air Interstate Rule
CEER	Consolidated Emissions Reporting Rule
CES	Certified Emission Statement
CFR	Code of Federal Regulations
CSAPR	Cross-State Air Pollution Rule
CSR	Code of State Rules
DAQ	West Virginia Division of Air Quality
EIS	Emissions Inventory System
EGU	Electrical Generating Unit
EPA	United States Environmental Protection Agency
FIP	Federal Implementation Plan
FGD	Flue Gas Desulphurization
FR	Fed Register
LMP	Limited Maintenance Plan
MOVES	Motor Vehicle Emission Simulator
MPO	Metropolitan Planning Organization
MVEBs	Motor Vehicle Emissions Budgets
NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
NH <sub>3</sub>	Ammonia
NO <sub>x</sub>	Nitrous Oxides
OAQPS	Office of Air Quality Planning and Standards
PM	Particulate Matter
PM <sub>10</sub>	Particulate Matter with an aerodynamic diameter ≤10 micrometers
PM <sub>2.5</sub>	Particulate Matter with an aerodynamic diameter ≤2.5 micrometers
PSD	Prevention of Significant Deterioration
RACT	Reasonably Available Control Technology
RCU	Revised CSAPR Update
SIP	State Implementation Plan
SO <sub>2</sub>	Sulfur Dioxide
µg/m <sup>3</sup>	Micrograms per Cubic Meter
VOC(s)	Volatile Organic Compound(s)

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## I. Request

The State of West Virginia is requesting the United States Environmental Protection Agency (EPA) approve the *Maintenance Plan Revision for the 2006 24-hour PM<sub>2.5</sub> NAAQS for the Charleston Area Comprising Kanawha and Putnam Counties*, as a revision to the State Implementation Plan (SIP) meeting the requirements of Clean Air Act (CAA) Section 175(A)(b).

## II. Background

The Federal Clean Air Act, 42 U.S.C.A. 7401 et seq. as amended by the Clean Air Act Amendments of 1990, P.L. 101-549, November 15, 1990 (CAA or the Act) requires all areas of the nation to attain and maintain compliance with the federal ambient air quality standards. These federal standards are designed to protect the public health and welfare from airborne pollutants and are referred to as the National Ambient Air Quality Standards (NAAQS). Pursuant to CAA Section 107(d)(1)(A), pollutant standards are established by the EPA and areas are designated as nonattainment (not meeting the standard), attainment (meeting the standard), or Unclassifiable (cannot be classified based on available information). States are required to comply with these NAAQS. When a nonattainment area attains the standard, states must demonstrate and seek the EPA's approval to redesignate the area.

Pursuant to CAA Section 107(d)(3)(E), as amended, the EPA Administrator may not promulgate a redesignation of a nonattainment area (or portion thereof) to attainment unless states meet five (5) requirements. With regards to the redesignation or designation of West Virginia's PM<sub>2.5</sub> areas to attainment, and as discussed in the following narratives, West Virginia has met all five (5) of the following requirements:

1. the Administrator determines that the area has attained the applicable NAAQS;
2. the Administrator has fully approved the applicable implementation plan for the area under CAA Section 110(k);
3. the Administrator determines that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the applicable implementation plan and applicable Federal air pollution control regulations and other permanent and enforceable reductions;

4. the Administrator has fully approved a maintenance plan for the area as meeting the requirements of Section 175A; and
5. the state containing such an area has met all requirements applicable to the areas under Section 110, Part D.

On October 17, 2006 (71 FR 61144<sup>1</sup>) the EPA revised the 24-hour PM<sub>2.5</sub> NAAQS (2006 PM<sub>2.5</sub> NAAQS). This standard revision was the result of a review of the available scientific evidence linking exposures to ambient PM<sub>2.5</sub> to adverse health and welfare effects at levels allowed by the previous 1997 standard. The 2006 24-hour standard was set at a level of 35 µg/m<sup>3</sup> based on the 3-year average of the 98th percentile of the 24-hour PM<sub>2.5</sub> concentrations measured at each ambient air monitor within an area.

Pursuant to the CAA, the EPA in the November 13, 2009, Federal Register (74 FR 58688<sup>2</sup>), designated four (4) West Virginia counties, which included Kanawha and Putnam Counties, as Subpart 1 or “basic” nonattainment areas with respect to the 2006 PM<sub>2.5</sub> NAAQS. The effective date of designation for Kanawha and Putnam counties was December 14, 2009. This designation was based on air quality data collected during 2006-2008 at state-operated and EPA-approved ambient air monitoring sites located in the Charleston, West Virginia Area (Charleston Area). Subpart 1 (basic) nonattainment areas were required to submit a plan within three (3) years of the effective date (December 14, 2012) detailing how the PM<sub>2.5</sub> standard would be attained and within five (5) years of designation (December 14, 2014) must attain the standard.

On February 14, 2011, West Virginia requested the EPA to make a formal finding that the Charleston, West Virginia Area was attaining the 2006 PM<sub>2.5</sub> NAAQS. On November 18, 2011 (76 FR 71450<sup>3</sup>), the EPA determined that the Charleston nonattainment area had clean data for the 2006 PM<sub>2.5</sub> NAAQS. The determination was based upon area quality assured, quality controlled, and certified ambient air monitoring data showing that the area monitored attainment of the 24-hour 2006 PM<sub>2.5</sub> NAAQS based on the 2007-2009 data and data available as of that date for 2010 in the EPA’s Air Quality System (AQS) database. The EPA’s determination released the Charleston Area from the requirements to submit an attainment

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<sup>1</sup> <https://www.govinfo.gov/content/pkg/FR-2006-10-17/pdf/06-8477.pdf>

<sup>2</sup> <https://www.govinfo.gov/content/pkg/FR-2009-11-13/pdf/E9-25711.pdf>

<sup>3</sup> <https://www.govinfo.gov/content/pkg/FR-2011-11-18/pdf/2011-29767.pdf>

demonstration, associated reasonably available control measures, a reasonable further progress plan, contingency measures, and other planning SIPs related to attainment of the standard for so long as the Charleston Area continues to meet the 2006 24-hour PM<sub>2.5</sub> NAAQS, which it has demonstrated.

West Virginia formally submitted a request to redesignate the Charleston Area from nonattainment to attainment for the 1997 annual and 2006 24-hour PM<sub>2.5</sub> NAAQS on December 6, 2012. The EPA approved this redesignation request, and Maintenance Plan, designating the area attainment on March 31, 2014 (79 FR 17884<sup>4</sup>).

On January 15, 2013 (78 FR 3085<sup>5</sup>), the EPA retained the 24-hour PM<sub>2.5</sub> standard at 35 µg/m<sup>3</sup>; however, the EPA strengthened the annual PM<sub>2.5</sub> standard by promulgating the 2012 PM<sub>2.5</sub> NAAQS. This action reduced the 2006 annual PM<sub>2.5</sub> standard from 15.0 µg/m<sup>3</sup> to 12.0 µg/m<sup>3</sup> based on extensive scientific evidence regarding the effects of PM<sub>2.5</sub> on public health and welfare. In addition to meeting the 24-hour standard, the Charleston Area also continues to meet both the 2006 and 2012 annual PM<sub>2.5</sub> NAAQS.

### III. Limited Maintenance Plan

Section 107(d)(3)(e) of the CAA stipulates for an area to be redesignated to attainment, the EPA must approve a maintenance plan meeting the requirements of Section 175A. Section 175A of the CAA defines the general framework of a maintenance plan. The maintenance plan must constitute a SIP revision and provide for maintenance of the relevant NAAQS in the affected areas. Section 175A further states that the plan must include the following:

1. A SIP revision providing for the maintenance of the NAAQS in the area.
2. The initial maintenance plan must provide for maintenance of the NAAQS in the area for 10 years after redesignation.

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<sup>4</sup> <https://www.govinfo.gov/content/pkg/FR-2014-03-31/pdf/2014-06955.pdf>

<sup>5</sup> <https://www.govinfo.gov/content/pkg/FR-2013-01-15/pdf/2012-30946.pdf>



3. Eight (8) years after redesignation, the state must submit a second SIP revision for maintaining the NAAQS through the end of the second 10-year period beyond redesignation.
4. Additional measures as necessary to ensure maintenance of the NAAQS in the area during this period.
5. A contingency plan assuring that the state will promptly correct any violation of the standard which occurs after the redesignation of the area to attainment.
6. The contingency plan shall include a requirement that the state will continue to implement all measures with respect to the control of the pollutant for the area that were contained in the SIP prior to the redesignation.

The EPA has referenced three (3) past guidance documents describing “Limited Maintenance Plans,” (LMPs) where the EPA has interpreted Section 175A to indicate an area can provide for maintenance of the NAAQS if it meets certain air quality-related criteria. Specifically, the key criteria outlined in these documents are the current air quality levels for ambient monitoring sites in the area should be substantially below the NAAQS (e.g., below 85% of the level of the standard), and that air quality levels have not been highly variable during preceding years.

Although these documents cite specific NAAQS pollutants, states have also developed, and the EPA has approved, LMPs for other NAAQS pollutants when those NAAQS were under active implementation planning. Accordingly, the EPA has taken the position that in appropriate cases, states can apply the principles outlined in these existing guidance documents in developing LMPs for certain NAAQS maintenance areas, and NAAQS nonattainment areas that are eligible for redesignation to attainment.

The three (3) documents listed in the EPA’s guidance are as follows:

- *Limited Maintenance Plan Option for Nonclassifiable Ozone Nonattainment Areas. November 16, 1994*<sup>6</sup>. This document addressed the LMP option available for the 1979 1-hour ozone NAAQS.

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<sup>6</sup>[https://www3.epa.gov/ttn/naaqs/aqmguidance/collection/cp2/19941116\\_shaver\\_limited\\_maintenance\\_nonclassifiable.pdf](https://www3.epa.gov/ttn/naaqs/aqmguidance/collection/cp2/19941116_shaver_limited_maintenance_nonclassifiable.pdf)

- *Limited Maintenance Plan Option for Nonclassifiable Carbon Monoxide Nonattainment Areas. October 6, 1995*<sup>7</sup>. This document addressed the LMP option available for the 1971 carbon monoxide NAAQS.
- *Limited Maintenance Plan Option for Moderate PM<sub>10</sub> Nonattainment Areas. August 9, 2001*<sup>8</sup>. This document addressed the LMP option for the 1987 PM<sub>10</sub> NAAQS.

Of the three (3) LMPs offered by the EPA, the qualifying criteria cited in the August 9, 2001, guidance document is most representative for PM<sub>2.5</sub>. West Virginia meets the specified qualifications outlined in the August 9, 2001, document and has elected to use elements of this guidance as a basis for the development of our LMP for the second 10-year 2006 24-hour PM<sub>2.5</sub> Maintenance Plan. A copy of the August 9, 2001, LMP guidance document is contained in **Appendix A**.

Each limited maintenance plan submission will be evaluated by the EPA on a case-by-case basis, taking into consideration the weight of evidence of the information presented in the SIP submission. Qualification for this LMP is discussed in the following section.

## 1. LMP Requirements

To qualify for the LMP option, an area should meet the following applicability criteria:

- The area should be attaining the 24-hour PM<sub>2.5</sub> NAAQS at all monitors in the area at or below 85% of the NAAQS.
- The area should have a low risk of future exceedances as shown by a stable or improving air quality trend.

For the purposes of demonstrating a stable or improving air quality trend, West Virginia calculated a five (5) year weighted design value using the most recent five (5) years of available PM<sub>2.5</sub> ambient air monitoring at all monitoring sites in the Charleston Area. As stated in 40 CFR, §50.13, the PM<sub>2.5</sub> design value for a monitoring site is the 3-year average of the 98th percentile of the 24-hour PM<sub>2.5</sub> concentrations. For our weighted design value,

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<sup>7</sup> <https://www.epa.gov/sites/default/files/2016-06/documents/1995lmp-co.pdf>

<sup>8</sup> <https://www.epa.gov/sites/default/files/2016-06/documents/2001lmp-pm10.pdf>

the five (5) most recent years available cover the 2016-2020 ambient air monitoring data. This includes 3-year design values for 2016-2018, 2017-2019, 2018-2020. Data from 2018 are included in three (3) design value periods, and 2017 data is included in two (2) out of three (3) design value periods. Therefore, the 2016-2020 average design value is commonly referred to as a 5-year weighted average design value since data from 2017 and 2018 is given more weight. With overall ambient PM<sub>2.5</sub> concentration levels trending downward, using a weighted average design value, which amplifies typically older and higher values, provides the most conservative approach at demonstrating area PM<sub>2.5</sub> levels are equal to or less than 85% of the 24-hour NAAQS.

The EPA's guidance describes how states may satisfy the Section 175A requirements to "provide for maintenance of the NAAQS" with an LMP meeting the following criteria:

*Current air quality levels significantly below the level of the standard:* As indicated in prior documentation, the EPA believes that an ambient air quality design value at or below 85% of the NAAQS (i.e., a 24-hour PM<sub>2.5</sub> value of 30.17 µg/m<sup>3</sup> as compared to a level of 35.49 µg/m<sup>3</sup>, which the EPA considers to be in compliance with the 2006 24-hour PM<sub>2.5</sub> standard based on rounding procedures<sup>9</sup> could be considered significantly below the standard and may be a good indicator that air quality is not likely to deteriorate to a level that would violate the NAAQS over the next 10 year period.

*Stable or improving air quality trend:* Several kinds of analyses can be performed to assess whether an area has had relatively stable or consistently improving air quality levels over the long term, such that the probability of the area violating the standard in the future would be considered low. One basic approach would be to take the most recent design value for the area and add the maximum design value increase (over one or more consecutive years) that has been observed in the area over the past several years. A sum that does not exceed the level of the standard (2006 PM<sub>2.5</sub> in this case) may be a good indicator of expected continued attainment. This type of metric should be considered on a case-by-case basis.

When the LMP option is selected, it is expected that the state will recalculate the average design value annually to ensure that the qualifying criteria continue to be met.

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<sup>9</sup> <https://www.govinfo.gov/content/pkg/CFR-2015-title40-vol2/pdf/CFR-2015-title40-vol2-part50-appN.pdf>

## 2. LMP Qualification

Based on the LMP requirements established by the EPA in their August 9, 2001, documentation, West Virginia has concluded the Charleston Area qualifies for an LMP based on analysis of monitored ambient air quality data. Support for this position is provided in the following discussion where several deciding factors are evaluated.

The 2006 24-hour PM<sub>2.5</sub> NAAQS is 35 µg/m<sup>3</sup>. The EPA has made the determination that a design value of 35.49 µg/m<sup>3</sup> would meet the NAAQS, following standard rounding procedures. Therefore, the LMP qualifying threshold value of 85% of the NAAQS equates to 30.17 µg/m<sup>3</sup>.

West Virginia evaluated the most recent five (5) years of ambient PM<sub>2.5</sub> air quality and 3-year design values. Certified area design values, as provided to the EPA and included in the EPA's AQS, were used in this evaluation. Design values for 2016-2018, 2017-2019, and 2018-2020 were used for each of the two ambient air monitoring sites located in the Charleston Area, which are the Charleston NCore site (54-039-0020) and South Charleston site (54-039-1005). Based on these values, the 5-year weighted average design values for both Charleston Area monitoring sites were calculated. The Charleston NCore site's calculated value was 14.19 µg/m<sup>3</sup>, and the South Charleston site value was calculated to be 14.77 µg/m<sup>3</sup>. Both sites are below the 30.17 µg/m<sup>3</sup>, 85% threshold level and are 42% or less of the NAAQS. This evaluation demonstrates that the 24-hour PM<sub>2.5</sub> air quality levels are significantly below the standard. *Table 1* below summarizes these values.

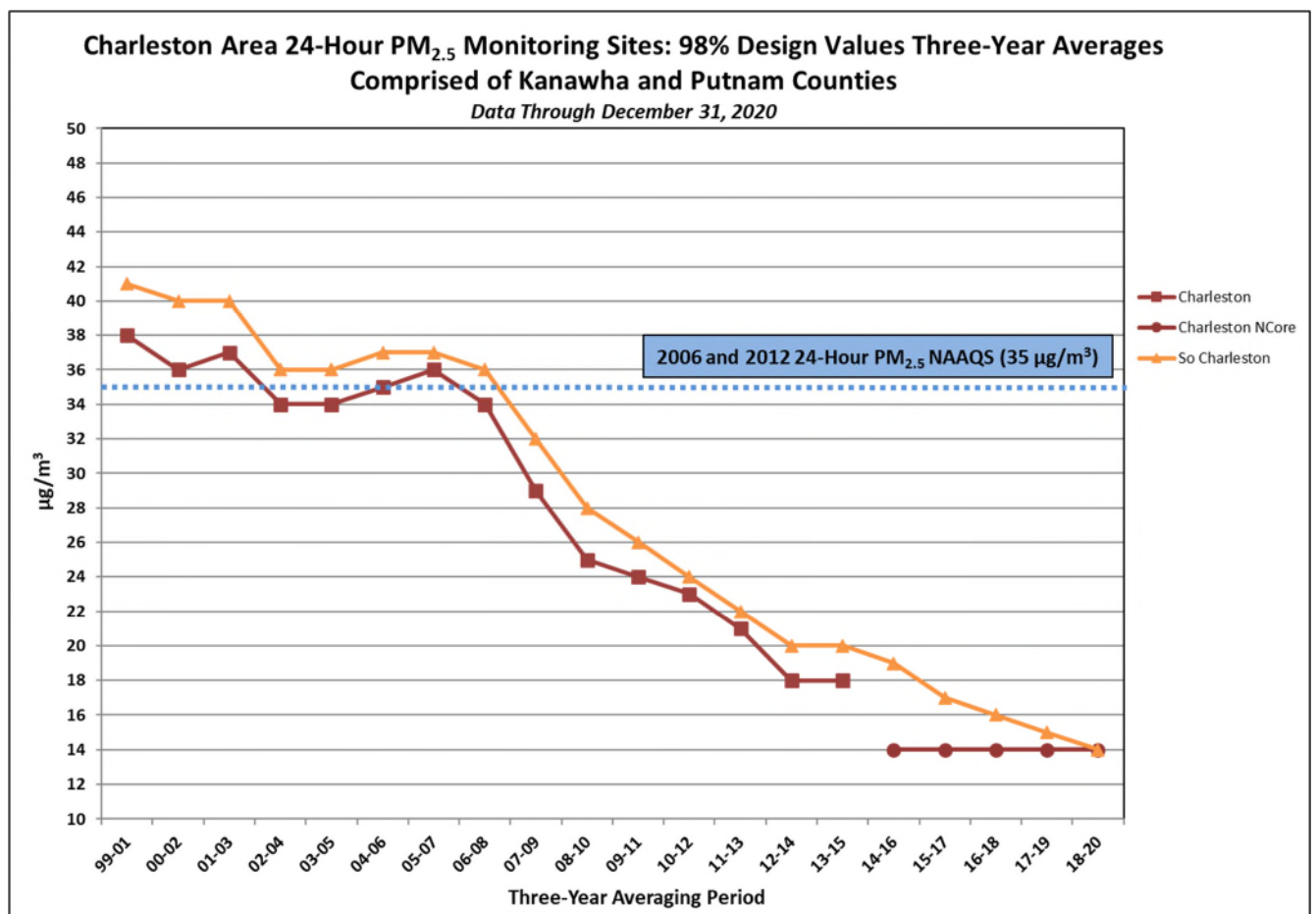
**Table 1: Charleston Area 24-Hour PM<sub>2.5</sub> Design Values in Micrograms per Cubic Meter (µg/m<sup>3</sup>)**

Monitoring Site	2016-2018	2017-2019	2018-2020	5-Year Weighed	Percent of NAAQS
Charleston NCore	14.47	14.20	13.90	14.19	39.98%
South Charleston	15.50	14.57	14.23	14.77	41.61%
<b>Site Averages:</b>	<b>14.98</b>	<b>14.38</b>	<b>14.07</b>	<b>14.48</b>	<b>40.79%</b>

The EPA redesignated the area from nonattainment to attainment for the 2006 24-hour PM<sub>2.5</sub> NAAQS on March 31, 2014. *Figure 1* shows the historical 3-year PM<sub>2.5</sub> design values

starting with the year 1999. The values are shown compared to the 2006 and 2012 24-hour NAAQS. As the chart depicts, PM<sub>2.5</sub> concentration levels for the area have significantly dropped over this period and have been dropping or relatively stable over the last five (5) years. Also, the values have constantly remained below the NAAQS since the 2006-2008 design value period. Based on these trends, PM<sub>2.5</sub> levels in the area are expected to remain stable or decrease during the next 10-year maintenance plan.

The break in *Figure 1's* Charleston PM<sub>2.5</sub> line is due to the ambient air monitor being relocated from the former Baptist Temple site (54-039-0010) to the new NCore site. Although both sites are in the City of Charleston, West Virginia and within approximately one half mile of each other, relocating the site resulted in a split of the overall PM<sub>2.5</sub> data set. Therefore, both the old and new Charleston locations monitoring data are shown as a burgundy line to depict the overall PM<sub>2.5</sub> trend.



**Figure 1: Historical Charleston Area 24-hour PM<sub>2.5</sub> Design Values per Three-Year Averaging Period**

Although not required for this 24-hour maintenance plan, *Figure 2* depicts the annual PM<sub>2.5</sub> ambient air monitoring data. *Figure 2* shows the annual PM<sub>2.5</sub> 3-year averages are also continuing to significantly decrease and are well below the 2006 annual PM<sub>2.5</sub> NAAQS of 15.0 µg/m<sup>3</sup> and the current 2012 annual NAAQS of 12.0 µg/m<sup>3</sup>. On March 17, 2016, EPA Office of Air Quality Planning and Standards (OAQPS) Director Stephen D. Page issued a memorandum entitled “*Information on the Interstate Transport "Good Neighbor" Provision for the 2012 Fine Particulate Matter National Ambient Air Quality Standards under Clean Air Act Section 11 O(a)(2)(D)(i)(I)*”<sup>10</sup> to the Regional Air Directors to provide PM<sub>2.5</sub> information to develop “Good Neighbor” provisions pertaining to the 2012 PM<sub>2.5</sub> NAAQS. In this memorandum, the EPA projected annual PM<sub>2.5</sub> design values to the year 2025. For the two Charleston Area ambient air monitors, the EPA predicted an average 2025 PM<sub>2.5</sub> design value of 8.14 µg/m<sup>3</sup> for the South Charleston monitoring site and 9.28 µg/m<sup>3</sup> for the Charleston site. Based on these projections, the average 2025 PM<sub>2.5</sub> design value for the Charleston Area is 8.71 µg/m<sup>3</sup>. This value is depicted in *Figure 2* and as can be seen the actual monitored PM<sub>2.5</sub> design values have been at or below the 2025 projected value since the 2014-2016 3-year average period. *Figure 2* further demonstrates that PM<sub>2.5</sub> levels will continue to decrease or be stable over the next 10-year maintenance period.

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<sup>10</sup> [https://www.epa.gov/sites/default/files/2016-08/documents/good-neighbor-memo\\_implementation.pdf](https://www.epa.gov/sites/default/files/2016-08/documents/good-neighbor-memo_implementation.pdf)

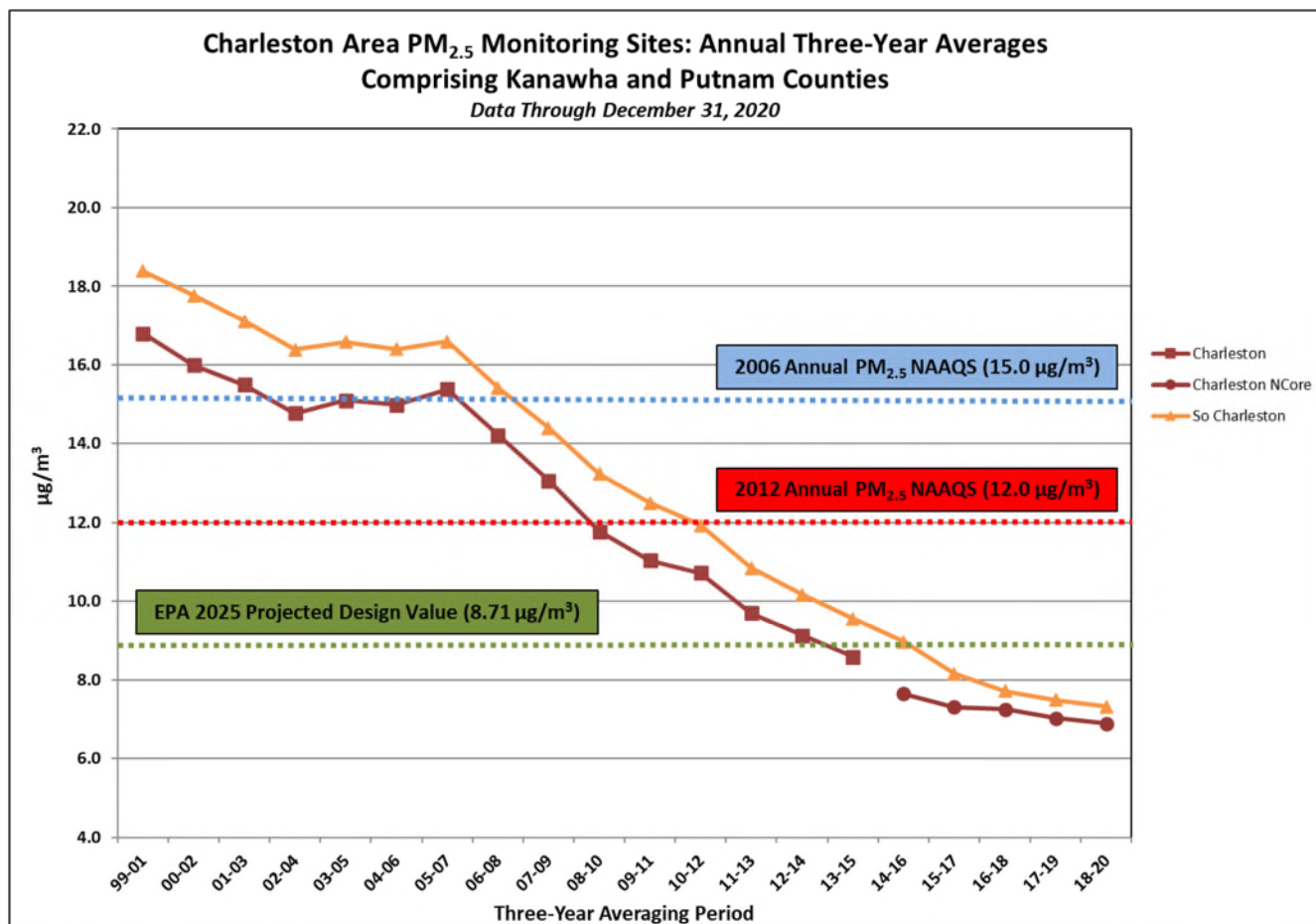


Figure 2: Historical Charleston Area Annual PM<sub>2.5</sub> Design Values per Three-Year Averaging Period

Point source stationary anthropogenic air emissions in general have been decreasing in West Virginia following the promulgation of the 2006 PM<sub>2.5</sub> standard. These decreases are primarily due to more stringent air pollution regulations, the shutdown or conversion of coal-fired equipment, attrition of older facilities and processes, and improved controls at significant sources of PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors. Most notable for the Charleston Area are the permanent shutdowns of Appalachian Power Company’s coal-fired Kanawha River Power Plant and the former Bayer CropScience’s large industrial coal-fired boilers at the Institute Site. These two closures alone equate to a reduction of nearly 3,300 tons of nitrogen oxides (NO<sub>x</sub>), 12,000 tons of sulfur dioxide (SO<sub>2</sub>), and 135.96 tons of PM<sub>2.5</sub>-pri per year, as compared to their 2014 emissions inventory. Also significant for the Charleston Area was the installation of flue gas desulphurization (FGD) systems on the three (3) large electrical generating units (EGU) at American Electric Power’s John Amos Power Plant for SO<sub>2</sub> control. The Amos FGD systems became operational for Unit 3 in 2009 and were

functional for Units 1 and 2 by 2011, and significantly reduced SO<sub>2</sub> emissions from the facility.

West Virginia's certified design value data, both as a 5-year weighted average presented in *Table 1* and as illustrated over time in *Figure 1* plus the annual PM<sub>2.5</sub> data illustrated over time in *Figure 2*, verifies that PM<sub>2.5</sub> levels in the Charleston Area are significantly below the 2006 24-hour NAAQS. Additionally, this data also demonstrates that PM<sub>2.5</sub> levels for the Charleston Area are stable or decreasing. Therefore, West Virginia has met the requirement to qualify for the LMP option for the Charleston Area.

#### IV. Attainment Year Emissions Inventory

As demonstrated in Section III above, West Virginia has met the qualification to submit a PM<sub>2.5</sub> limited maintenance plan for the second 10-year plan period for the Charleston Area. An area meeting the limited maintenance plan qualification criteria is at little risk of violating the standard because emissions are not expected to grow sufficiently to threaten the maintenance of the standard. As stated in Section V.b. of the LMP guidance, "if the tests described in Section IV are met, we will treat that as a demonstration that the area will maintain the NAAQS. Consequently, there is no need to project emissions over the maintenance period." Therefore, for the second 10-year maintenance plan, 2017 was selected as the attainment year. This year was selected because it is the most recent and comprehensive emissions inventory year data quality assured by the EPA. The following emissions inventory data was taken from the EPA's 2017 National Emissions Inventory (NEI), Version 2. Supporting documentation and data for the 2017 NEI emission inventories are located at the following website: <https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data>.

*Table 2* through *Table 6* provide the 2017 anthropogenic emissions inventory in tons for Kanawha and Putnam Counties located within the Charleston, WV maintenance area. Each county's emissions are provided by emission sectors, which includes point, nonpoint, onroad, nonroad, and event-fires. These tables provide emission data for not only PM<sub>2.5</sub>, but also the secondary PM<sub>2.5</sub> precursor pollutants SO<sub>2</sub>, NO<sub>x</sub>, volatile organic compounds (VOC), and ammonia (NH<sub>3</sub>). The PM<sub>2.5</sub> emissions provided are PM<sub>2.5</sub>-pri (primary), which includes both the filterable and condensable portions.



The point source sector includes large industrial operations that are relatively few but have significant emissions, such as electric generating units, chemical complexes, and other traditional larger manufacturing facilities. Emission sources in the nonpoint emissions sector includes emissions from equipment, operations, and activities that are numerous and in aggregate have significant emissions. Examples include emissions from commercial and consumer products, residential heating, asphalt paving, repair and refinishing operations, and dry cleaners, as well as many others. The onroad emissions sector includes emissions from engines used primarily to propel equipment on highways and other roads, including passenger vehicles, motorcycles, and heavy-duty diesel trucks. Engines not primarily used to propel transportation equipment, such as construction equipment, electric generators, forklifts, lawn and garden equipment, and marine pleasure craft make up the nonroad sector. Emissions from agricultural burning, prescribed fires, wildfires, and other types of fires are examples of the event-fire sector.

**Table 2: 2017 Attainment Year PM<sub>2.5</sub>-pri Emissions Inventory - Charleston, WV PM<sub>2.5</sub> Maintenance Area (Tons)**

County	Point	Nonpoint	Onroad	Nonroad	Event-Fire	Totals
Kanawha	60.50	1,756.29	78.13	70.10	175.72	<b>2,140.74</b>
Putnam	116.48	573.21	21.77	13.66	149.51	<b>874.63</b>
<b>Totals:</b>	<b>176.98</b>	<b>2,329.50</b>	<b>99.90</b>	<b>83.76</b>	<b>325.23</b>	<b>3,015.37</b>

**Table 3: 2017 Attainment Year SO<sub>2</sub> Emissions Inventory - Charleston, WV PM<sub>2.5</sub> Maintenance Area (Tons)**

County	Point	Nonpoint	Onroad	Nonroad	Event-Fire	Totals
Kanawha	38.08	54.99	14.45	1.32	16.51	<b>125.35</b>
Putnam	5,718.08	21.93	4.01	0.30	16.04	<b>5,760.36</b>
<b>Totals:</b>	<b>5,756.16</b>	<b>76.92</b>	<b>18.46</b>	<b>1.62</b>	<b>32.55</b>	<b>5,885.71</b>

**Table 4: 2017 Attainment Year NO<sub>x</sub> Emissions Inventory - Charleston, WV PM<sub>2.5</sub> Maintenance Area (Tons)**

County	Point	Nonpoint	Onroad	Nonroad	Event-Fire	Totals
Kanawha	1,601.01	2,593.71	2,345.14	411.01	32.18	<b>6,983.05</b>
Putnam	6,253.67	755.87	664.71	124.94	34.70	<b>7,833.89</b>
<b>Totals:</b>	<b>7,854.68</b>	<b>3,349.58</b>	<b>3,009.85</b>	<b>535.95</b>	<b>66.88</b>	<b>14,816.94</b>

**Table 5: 2017 Attainment Year VOC Emissions Inventory - Charleston, WV PM<sub>2.5</sub> Maintenance Area (Tons)**

County	Point	Nonpoint	Onroad	Nonroad	Event-Fire	Totals
Kanawha	1,107.90	24,104.87	1,244.69	891.55	471.99	<b>27,821.00</b>
Putnam	259.49	9,599.83	360.64	132.00	386.70	<b>10,738.66</b>
<b>Totals:</b>	<b>1,367.39</b>	<b>33,704.70</b>	<b>1,605.33</b>	<b>1,023.55</b>	<b>858.69</b>	<b>38,559.66</b>

**Table 6: 2017 Attainment Year NH<sub>3</sub> Emissions Inventory - Charleston, WV PM<sub>2.5</sub> Maintenance Area (Tons)**

County	Point	Nonpoint	Onroad	Nonroad	Event-Fire	Totals
Kanawha	68.79	188.13	68.71	1.12	32.83	<b>359.58</b>
Putnam	3.85	125.74	18.81	0.27	26.90	<b>175.57</b>
<b>Totals:</b>	<b>72.64</b>	<b>313.87</b>	<b>87.52</b>	<b>1.39</b>	<b>59.73</b>	<b>535.15</b>

## V. Maintenance Plan

On December 6, 2012, West Virginia submitted the initial Maintenance Plan for the Charleston, West Virginia 2006 24-hour PM<sub>2.5</sub> Area, comprising Kanawha and Putnam Counties. The Plan was successfully employed resulting in the decrease in PM<sub>2.5</sub> concentration levels for the area, as indicated by the historically monitored ambient air quality PM<sub>2.5</sub> design values. This Limited Maintenance Plan will serve as the required second 10-year maintenance plan and will ensure continued compliance with 24-hour PM<sub>2.5</sub> NAAQS.

In accordance with the CAA, areas seeking to be redesignated to attainment under the LMP policy must have an attainment plan that has been approved by the EPA, pursuant to Section 107(d)(3)(E). The plan must include all control measures that were relied on by the state to demonstrate attainment of the NAAQS. The state must also ensure that the CAA requirements for PM<sub>2.5</sub> pursuant to Section 110, Part D of the Act have been satisfied. To comply with the statute, the LMP should clearly indicate that all controls that were relied on to demonstrate attainment will remain in place. If a state wishes to roll back or eliminate controls, the area can no longer qualify for the LMP, and the area will become subject to full maintenance plan requirements within 18 months of the determination that the LMP is no longer in effect. West Virginia is, at this time, not seeking to remove any control measures and will continue to implement all control measures in the PM<sub>2.5</sub> applicable SIP for the Charleston Area.

Section 175A of the CAA defines the general framework of a maintenance plan. The maintenance plan must constitute a SIP revision and provide for maintenance of the relevant NAAQS in the affected areas for at least 10 years after redesignation. Section 175A further states that the plan must contain such additional measures, if any, as may be necessary to ensure such maintenance. The start date for the initial 10-year Maintenance Plan began on the effective date the EPA approved the redesignation request. The effective date was April 30, 2014, for the Charleston Area. Since a maintenance plan must ensure attainment for a minimum of 10 years, 2024 was the earliest year the first 10-year maintenance plan could end. A second and final 10-year Maintenance Plan would be submitted to the EPA for their review and approval eight (8) years after the effective date and two (2) years prior to the expiration of the initial plan. The second plan is due to the EPA by April 30, 2022.

## 1. Maintenance Tracking Measures

West Virginia proposes to fully update its point, nonpoint, and mobile source emission inventories at 3-year intervals as required by the Consolidated Emissions Reporting Rule (CERR). These inventories ensure projected area emission growth is sufficiently accurate, and ongoing attainment with the NAAQS is maintained. The WVDEP will review annual point source emissions per the source permitting rule 45CSR30<sup>11</sup>, “*Requirements for Operating Permits*” (the Title V operating program), and by annually updating West Virginia’s point

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<sup>11</sup> <https://dep.wv.gov/daq/Documents/Final45CSR30.pdf>

source emission inventories and submitting this emission data to the EPA's Emissions Inventory System (EIS). The nonpoint source inventory will be updated at least triennially using the same or similar techniques, methodologies, and tools as developed by the EPA. However, West Virginia may substitute the EPA nonpoint source categories default input values with West Virginia specific data. The mobile source inventory will be updated no less often than triennially using the current approved Motor Vehicle Emission Simulator (MOVES) model. Like the nonpoint inventory, West Virginia may substitute actual West Virginia mobile data for the EPA's default data. Mobile emissions data may also be obtained in consultation with the Charleston Area's Metropolitan Planning Organization (MPO) and using appropriate data and methodology used for Transportation Conformity purposes.

Based on previous emissions inventory data and calculation methodology, it is expected that area and mobile source emissions would not exhibit substantial increases between consecutive periodic year inventories. Therefore, if significant unanticipated emissions growth occurs, it is expected that point sources would be the primary cause. Since Rule 45CSR30 requires major point source emitters to submit annual air emission inventories and Certified Emission Statements (CES), which contain PM<sub>2.5</sub> and PM<sub>2.5</sub> precursor emission totals, any significant increases that occurs can be identified from these inventories or statements without waiting for a triennial emissions inventory. This gives West Virginia the capability to identify needed regulations by source, source category, and/or pollutant and to begin the rule promulgation process, if necessary, in an expeditious manner.

Pursuant to Section 110, Part D of the CAA, West Virginia has operated under the Clean Air Interstate Rule (CAIR) following the approval of our 2012 maintenance plan. When CAIR was replaced by the Cross-State Air Pollution Rule (CSAPR), West Virginia began implementation of the revised regulation. In June 2019, the federal CSAPR rules were adopted by West Virginia and codified in 45CSR43<sup>12</sup>, *"Cross-State Air Pollution Rule to Control Annual Nitrogen Oxides Emissions, annual Sulfur Dioxide Emissions, and Ozone Season Nitrogen Oxides Emissions"*. These control measures were one of the mechanisms relied on to demonstrate attainment and will remain in place to ensure the CAA requirements continue to be fulfilled.

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<sup>12</sup> <https://dep.wv.gov/daq/rulessummary/Documents/2019%20Final%20Rules/45CSR43-2019.pdf>

Since, on March 15, 2021, the EPA promulgated the Revised CSAPR Update (RCU) Rule. Under this rule, the EPA will implement a Federal Implementation Plan (FIP) which further reduces allocated NO<sub>x</sub> emissions to 12 states, including West Virginia. Although this rule was in response to the 2008 Ozone NAAQS, reductions in NO<sub>x</sub> emissions as a PM<sub>2.5</sub> precursor will further enhance area PM<sub>2.5</sub> ambient air concentrations. Allocation requirements under this rule became effective for the 2021 Ozone season and will decrease each year through 2024 and then remain at that rate for future years.

## 2. Monitoring Network

West Virginia will continue to conduct ambient PM<sub>2.5</sub> air quality monitoring in the Charleston Area throughout the term of this Maintenance Plan to verify continued attainment with the 2006 24-hour PM<sub>2.5</sub> NAAQS and to protect any applicable Prevention of Significant Deterioration (PSD) increments. Air quality measurements will be performed in accordance with appropriate regulations and guidance documents along with EPA quality assurance requirements. Monitoring procedures will be determined in accordance with 40 CFR Part 58. Quality-assured PM<sub>2.5</sub> data will be submitted to the EPA through the AQS and annually certified by West Virginia.

Pursuant to Section 103 of the CAA, West Virginia operates and maintains a network of ambient PM<sub>2.5</sub> air quality monitoring sites throughout the State. These sites serve to assess ambient air quality levels based on population exposure, industry emissions, determine compliance with the NAAQS, background levels, and other special purposes. Provision for the continued operation of the air monitoring network is provided through federal grant funding.

## 3. Permanent and Enforceable Improvements

West Virginia has adopted permanent and federally enforceable control measures to regulate emission growth. These area control measures have been approved by the EPA and include the permitting rules 45CSR13<sup>13</sup> (*Permits for Construction, Modification, Relocation, and Operation of Stationary Sources of Air Pollutants, Notification Requirements,*

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<sup>13</sup> [https://dep.wv.gov/daq/small%20business/Documents/45CSR13\\_Final.pdf](https://dep.wv.gov/daq/small%20business/Documents/45CSR13_Final.pdf)

*Administrative Updates, Temporary Permits, General Permits, Permission to Commence Construction, and Procedures for Evaluation*") and 45CSR14<sup>14</sup> ("*Permits for Construction and Major Modification of Major Stationary Sources for the Prevention of Significant Deterioration of Air Quality*", PSD permitting). These permitting rules and requirements will remain in effect through the maintenance plan period. Future issued air permits will incorporate applicable 45CSR13, 45CSR14, 45CSR16<sup>15</sup> ("*Standards of Performance for New Stationary Sources*"), and 45CSR34<sup>16</sup> ("*Emission Standards for Hazardous Air Pollutants*") requirements. In appropriate cases, Consent Orders and their specific requirements also may be used as a temporary control measure.

Major emission sources proposing to construct new facilities or make a major modification to existing facilities within the area are required to obtain a New Source Review PSD permit through West Virginia state rule 45CSR14. An engineering evaluation and analysis of information pertaining to the source is performed prior to issuance of any permit. The PSD program also requires a modeling demonstration to be performed to ensure ongoing NAAQS compliance and applicable PSD increments are not exceeded.

Permanent and enforceable control measures implemented through air permits and Consent Orders are designed to maintain ambient air quality PM<sub>2.5</sub> levels.

## VI. Contingency Measures

Section 175A of the CAA states a maintenance plan must include contingency provisions, as necessary, to promptly correct any violation of the NAAQS which may occur after redesignation of the area to attainment. A contingency plan is considered an enforceable part of the SIP. States must ensure that the contingency measures are adopted as soon as possible once they are triggered by a specific event. The contingency plan identifies the measures to be adopted and provides a schedule and procedures for adoption and implementation of the measures if they are required. Normally, the implementation of contingency measures is triggered by a

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<sup>14</sup> [https://dep.wv.gov/daq/small%20business/Documents/45CSR14\\_Final.pdf](https://dep.wv.gov/daq/small%20business/Documents/45CSR14_Final.pdf)

<sup>15</sup> <https://dep.wv.gov/daq/rulessummary/Documents/2021%20Final%20Rules/45-16%20-%202021.pdf>

<sup>16</sup> <https://dep.wv.gov/daq/rulessummary/Documents/2021%20Final%20Rules/45-34%20-%202021.pdf>

violation of the NAAQS, but the state may establish other triggers to prevent a violation of the NAAQS.

A limited maintenance plan also requires contingency measures to correct NAAQS violations. West Virginia proposes to retain the existing Contingency Plan that follows, which was previously approved by the EPA for the initial Charleston Area Maintenance Plan.

*Warning Level Response:*

A warning level response shall be prompted whenever the 98th percentile 24-hour PM<sub>2.5</sub> concentration of 35.5 µg/m occurs in a single calendar year within the maintenance area. A warning level response will consist of a study to determine whether the PM<sub>2.5</sub> value indicates a trend toward higher PM<sub>2.5</sub> values or whether emissions appear to be increasing. The study will evaluate whether the trend, if any, is likely to continue and, if so, the control measures necessary to reverse the trend taking into consideration ease and timing for implementation as well as economic and social considerations. Implementation of necessary controls in response to a warning level response trigger will take place as expeditiously as possible, but in no event later than 12 months from the conclusion of the most recent calendar year.

*Action Level Response:*

An action level response shall be prompted whenever a two-year average of the 98<sup>th</sup> percentile 24-hour PM<sub>2.5</sub> concentration of 35.5 µg/m or greater occurs within the maintenance area. A violation of the standard (3-year average of the 98 percentiles of 35.5 µg/m<sup>3</sup> or greater) shall also prompt an action level response. If the action level is triggered and is not found to be due to an exceptional event, malfunction, or noncompliance with a permit condition or rule requirement, the West Virginia DAQ in conjunction with the metropolitan planning organization or regional council of governments as appropriate, will determine additional control measures needed to assure future attainment of the 2006 PM<sub>2.5</sub> NAAQS. In this case, measures that can be implemented in a short time will be selected to be in place within 18 months from the close of the calendar year prompting the action level. The West Virginia DAQ will also consider the timing of an action level trigger and determine if additional, significant new regulations not currently included as part of the maintenance provisions will be implemented in a timely manner and will constitute our response.

### Potential Contingency Measures:

Contingency measures to be considered will be selected from a comprehensive list of measures deemed appropriate and effective at the time the selection is made. The selection of measures will be based on cost-effectiveness, emission reduction potential, economic and social considerations, or other factors that the West Virginia DAQ deems appropriate. The West Virginia DAQ will solicit input from all interested and affected persons in the maintenance area prior to selecting appropriate contingency measures. Because it is not possible at this time to determine what control measures will be appropriate at an unspecified time in the future, the list of contingency measures outlined below is not exhaustive.

- 1) Diesel reduction emission strategies.
- 2) Alternative fuel (e.g., liquid propane and compressed natural gas) and diesel retrofit programs for fleet vehicle operations.
- 3) Tighter PM<sub>2.5</sub>, SO<sub>2</sub>, and NO<sub>x</sub> emissions offsets for new and modified major sources.
- 4) Concrete manufacturing - upgrade wet suppression.
- 5) Additional NO<sub>x</sub> Reasonably Available Control Technology (RACT) statewide.

No contingency measure shall be implemented without providing the opportunity for full public participation during which the relative costs and benefits of individual measures, at the time they are under consideration, can be fully evaluated.

Control measures from the initial Maintenance Plan, and the revisions and implementation of existing and new state and federal regulations have aided in the continual improvement of the Charleston Area's ambient PM<sub>2.5</sub> air quality. Implementation of Contingency Plan measures have not been necessary during the initial Maintenance Plan's performance period.

## **VII. Conformity**



The Transportation Conformity regulations (40 CFR, Parts 51 and 93) and the General Conformity regulation (58 FR 63214<sup>17</sup>; November 30, 1993) apply to areas operating under maintenance plans. Under either conformity regulation, one means of demonstrating conformity of Federal actions is to indicate expected emissions from planned actions are consistent with the emissions budget for the area. Per EPA policy, emissions budgets in an LMP area may be treated as essentially not constraining for the length of the maintenance period on the grounds that growth during that time is not expected to trigger a violation of the NAAQS. While this policy does not exempt an area from the need to affirm conformity, it does allow the area to demonstrate conformity without undertaking certain requirements of these regulations. For transportation conformity purposes, the EPA would conclude that emission caps or motor vehicle emission budgets (MVEB) for highway vehicles in these areas are not constraining for the length of the maintenance period of the LMP because one can reasonably expect emissions growth in the area will not result in a violation of the NAAQS; therefore, a regional emissions analysis would not be required under 40 CFR, §93.109.

In the first Maintenance Plan, West Virginia demonstrated to the EPA regional highway emissions of PM<sub>2.5</sub> and precursor emissions were insignificant contributors to the nonattainment problem for the Charleston Area. For this reason, no MVEBs were established. In the EPA's redesignation of the area from nonattainment to attainment and approval of the Charleston Area's Maintenance Plan on March 31, 2014 (79 FR 17884<sup>18</sup>), the EPA also approved West Virginia's transportation conformity insignificant demonstration for PM<sub>2.5</sub> and NO<sub>x</sub> emissions.

In 40 CFR §93.109(f) of the Transportation Conformity regulations, the regulation specifically addresses areas with insignificant motor vehicle emissions. If the EPA approves an insignificant demonstration for an area through the SIP process, the area is not required to satisfy a regional emissions analysis for §93.118 and/or §93.119 for a given pollutant/precursor and the NAAQS. Although a regional emission analysis is not required, MPO's are still required to comply with other provisions of the Transportation Conformity regulation such as consultation, public review, and hot spot analysis.

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<sup>17</sup> [https://archives.federalregister.gov/issue\\_slice/1993/11/30/63202-63259.pdf#page=13](https://archives.federalregister.gov/issue_slice/1993/11/30/63202-63259.pdf#page=13)

<sup>18</sup> <https://www.govinfo.gov/content/pkg/FR-2014-03-31/pdf/2014-06955.pdf>

Therefore, based on the above, West Virginia complies with the Transportation Conformity regulation, Charleston Area motor vehicle PM<sub>2.5</sub> and NO<sub>x</sub> are deemed insignificant by the EPA, and no other regional emission analysis is required for the second 10-year Maintenance Plan.

Furthermore, it is expected over the next 10-year period as newer vehicles replace older models, vehicle emissions will continue to decrease beyond current levels. This is especially true as gasoline and diesel vehicles are replaced with electric vehicles.

## VIII. Public Review

The West Virginia Division of Air Quality commenced the public review period for the Charleston Area LMP on [REDACTED], 2022. A 30-day request for public comment and notification of public hearing appeared in the [REDACTED], 2022, edition of the Charleston Gazette-Mail newspaper and in the [REDACTED], 2022, in Volume [REDACTED], Issue [REDACTED] of the West Virginia State Register. A public hearing was held at the West Virginia Department of Environmental Protection Headquarters in Charleston, West Virginia or virtually on [REDACTED], 2022, at 6:00PM. The public review period to accept oral and written comments regarding the proposed maintenance plan ended upon conclusion of the hearing. The public hearing required by 40 CFR § 51.102(a) was held in accordance with the applicable state law and the requirements of 40 CFR § 51.102(d).

Results of the public review may be found in **Appendix B**.

## IX. Conclusion

As discussed, qualification for a limited maintenance plan requires that the area should be attaining the 24-hour PM<sub>2.5</sub> NAAQS. The average design value for the Charleston Area, based upon the most recent five (5) years of ambient air quality data at all monitors in the area, should be at or below 85% of the NAAQS. West Virginia calculated a 5-year weighted design value for the two Charleston Area ambient air monitoring sites, Charleston NCore (54-039-0020) and South Charleston (54-039-1005). The 5-year weighted design values for these sites were 14.19 µg/m<sup>3</sup> and 14.77 µg/m<sup>3</sup>, respectively. These values are significantly below the 30.17 µg/m<sup>3</sup>

requirement to meet the LMP 85% of NAAQS threshold. On average, these two sites are less than 40.79% of the 24-hour PM<sub>2.5</sub> NAAQS and fulfills this requirement to qualify for an LMP.

Qualification for an LMP further requires the candidate area should have no NAAQS violations at any ambient air monitor in the area. The Charleston Area has not had any NAAQS violations after the promulgation of the 2006 24-hour PM<sub>2.5</sub> NAAQS, and it has consistently had design values below the 2006 and 2012 NAAQS. The consistent achievement of decreasing PM<sub>2.5</sub> NAAQS fulfills this requirement to qualify for an LMP.

Finally, qualification for an LMP requires that the candidate area should have a low risk of future exceedances. The historic data presented in *Figure 1* and *Figure 2* demonstrates a downward trend in PM<sub>2.5</sub> levels in the Charleston Area. With regulatory controls currently in place and those that may be promulgated in the future, this trend is expected to continue in the future or at least remain relatively stable.

Furthermore, the EPA has deemed motor vehicle PM<sub>2.5</sub> and NO<sub>x</sub> emissions as insignificant to the Charleston Area and a regional emissions analysis is not required for transportation conformity purposes.

Under consideration of the information presented, West Virginia requests the EPA approve this limited maintenance plan for the Charleston Area as meeting the requirements of CAA Section 175(A) with respect to the 24-hour PM<sub>2.5</sub> standard. This approved plan will be effective until April 30, 2034.